

More Meaningful Use of CDA: the CDA-FHIR Bridge

Robert Worden

rpworden@me.com

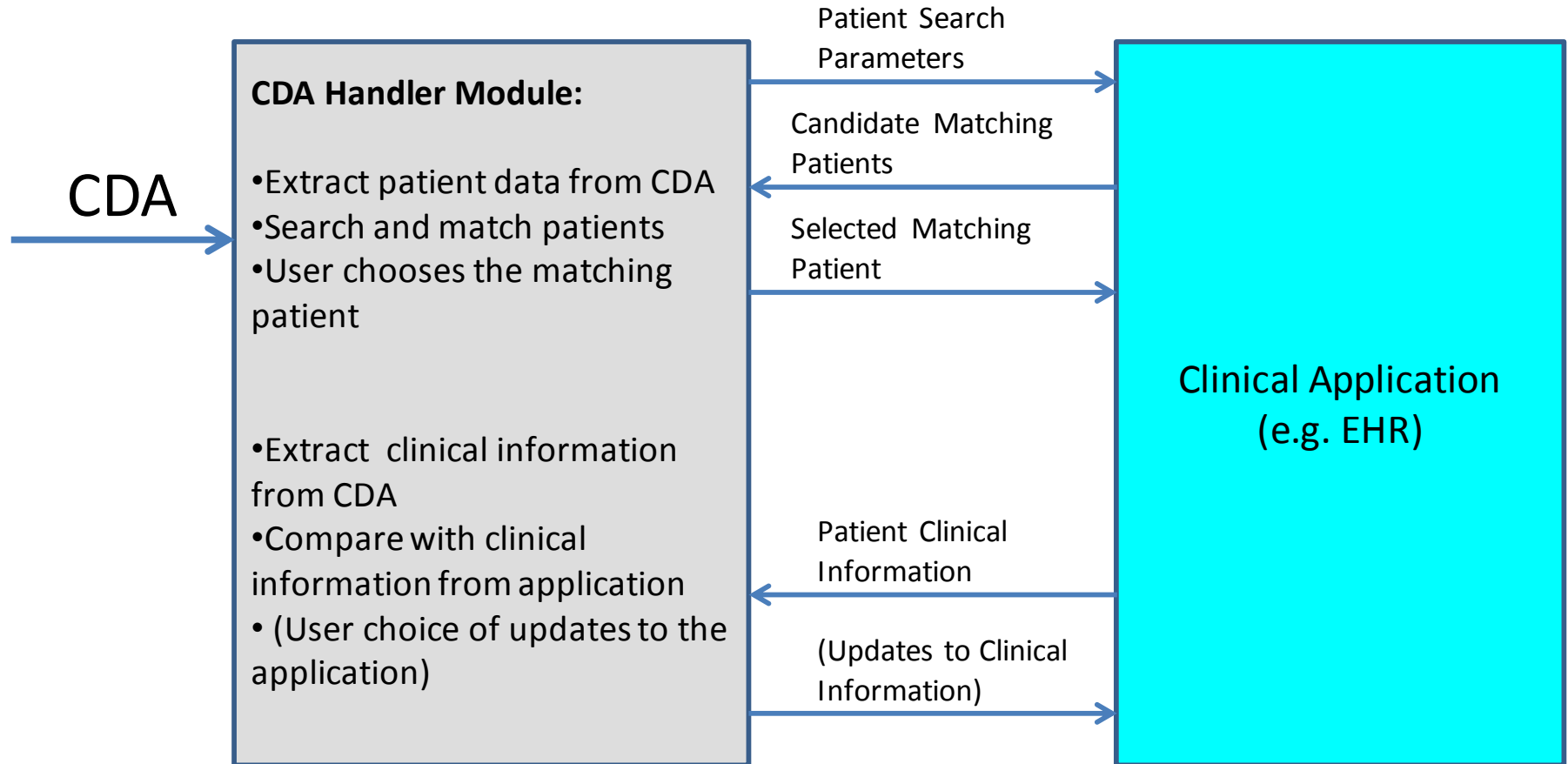
Summary

- For Meaningful Use of CDA, you may need to **compare** an incoming CDA with existing information about the patient.
- This means **matching** patient data from the CDA, with data from an EHR
- FHIR can be the standard data format for matching and comparing
- This requires a **three-component architecture**
- All three components are easy to build
- Proof-of-concept implementations exist now
- This will encourage adoption of both CDA and FHIR

More Meaningful Use of CDA

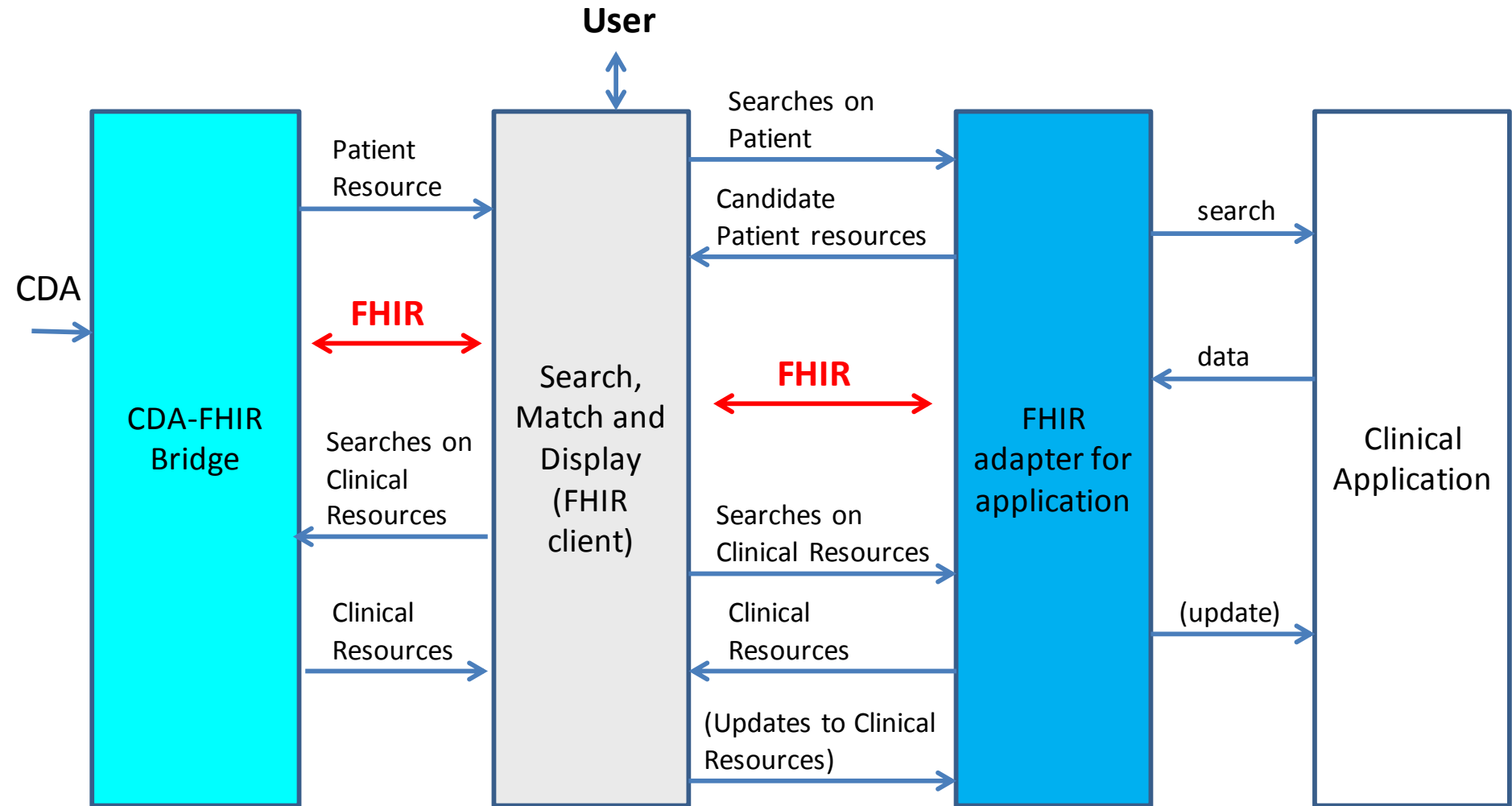
- When reading a CDA, a physician is **not just a blank slate** for new information.
- Often, he or she knows about the patient already.
- The physician needs to **compare** the new information in the CDA with what they already know.
- Their knowledge of the patient may be stored in an EHR.
- Comparing requires **matching** of information from the CDA, with information in the EHR:
 - Match and identify the patient
 - Match clinical data for the patient (e.g. allergies, medications,..)
- Then (possibly) make updates to the EHR, at the physician's discretion

Architecture for CDA Match/Compare



Few clinical applications support this now.

FHIR-enabled CDA Match/Compare



Three components simplify implementation.

(1) CDA-FHIR Bridge

- Enables any incoming CDA as a **small FHIR server**
- The CDA 'server' supports FHIR searches on common resources (Patient, AllergyIntolerance,...)
- This is not a full transform from CDA to a FHIR Composition resource; extracting specific FHIR resources is much easier
- Transforms depend on CDA templates
- There will be a different bridge for each CDA profile
- There is no dependence on the EHR application – the bridge is universal for each CDA profile

(2) FHIR-Enabling an Existing Application

- Initially, read-only; to search for FHIR resources represented in the application.
- Done by mapping FHIR to the application's APIs, or by mapping to the application database
- Mapping to a database supports many FHIR searches automatically (by generated SQL)
- It is easy to do (< 1 man-month per resource)
- e.g. It is being done for the PAS in an NHS hospital in London (resources: Patient, Appointment,...)

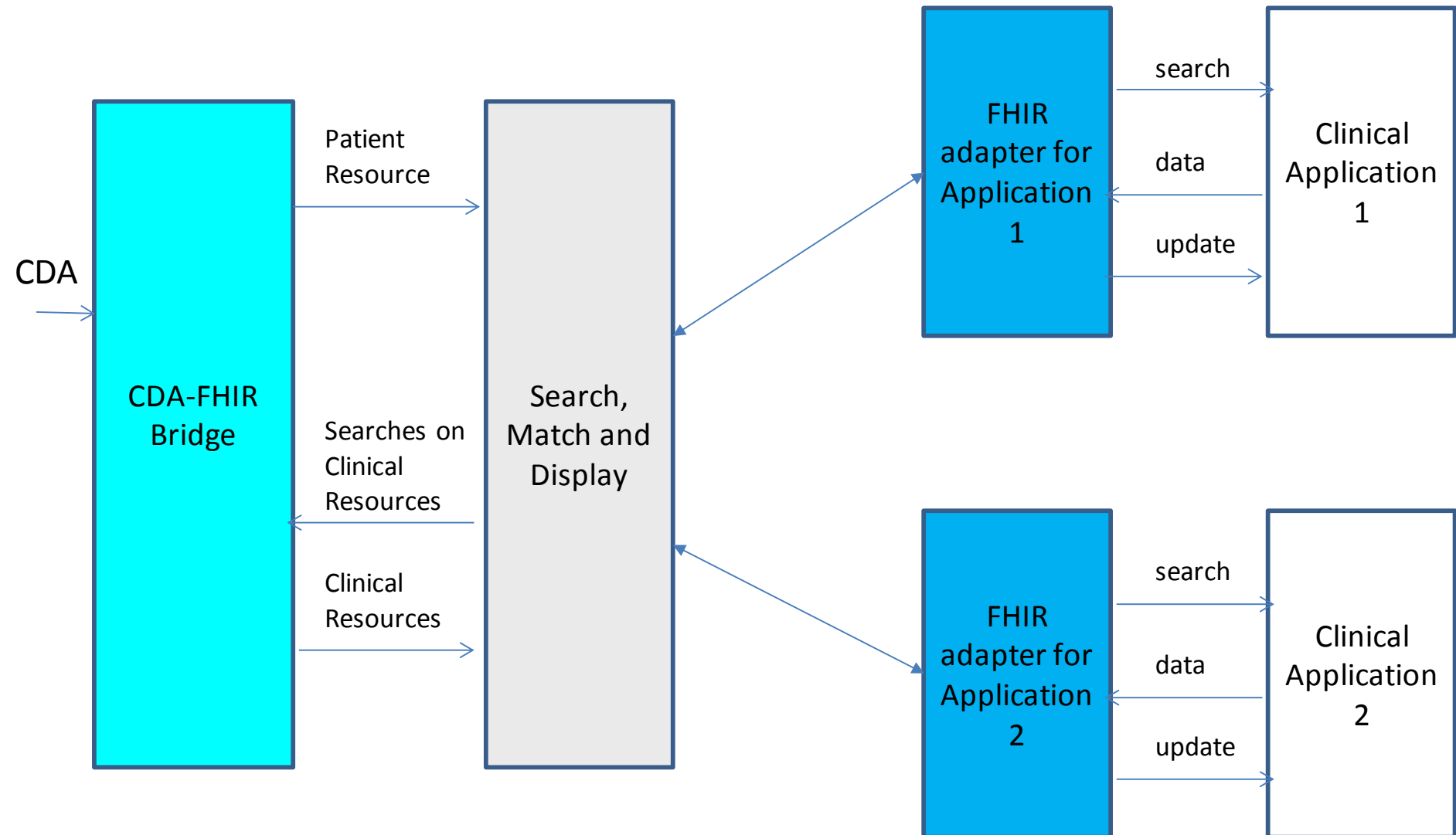
(3) Search, Match and Display

- An interactive component
- Lives in a FHIR-only world (XML or JSON)
- Client to 2 or more FHIR servers (CDA, EHR,...)
- Functions:
 - Run searches on all connected FHIR servers
 - Match and display resources (e.g. in a table)
 - Allow the user to review, compare, match, take actions:
 - Patient resource
 - Clinical resources for the patient
- Proof of Concept implementation exists (on Eclipse)
- Can be web-based, tablet based
- Independent of CDA profiles, or EHR data model (depends only on supported FHIR resources)
- Can be universal, configurable

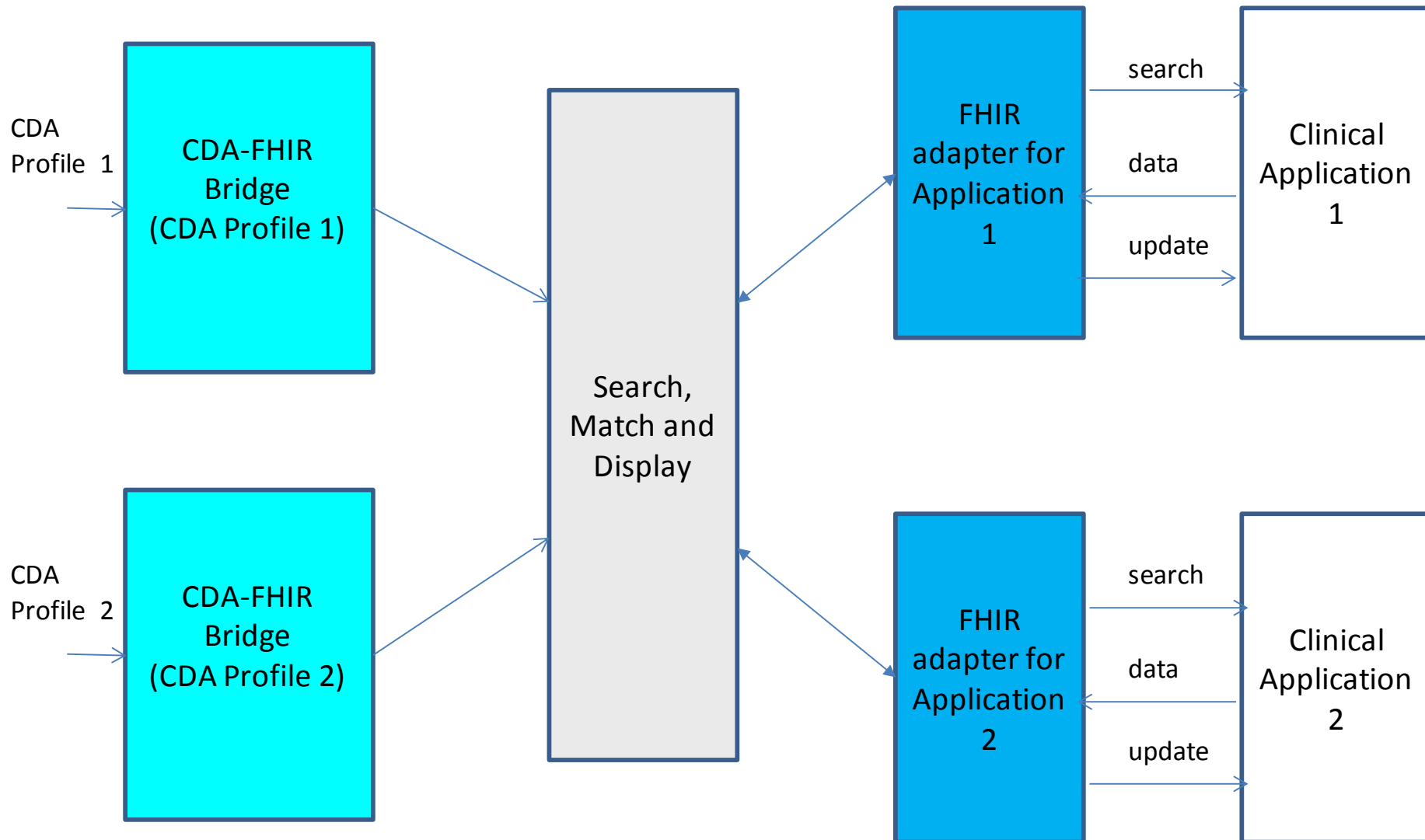
Three-Component CDA-FHIR Architecture: Summary

- Separation of components makes each one easy to implement:
 - **CDA-FHIR bridge**: depends only on CDA profile and FHIR resources supported
 - **FHIR front-end for a clinical application**: depends only on the application and the FHIR resources supported
 - **Search, Match and Display**: depends only on the FHIR resources supported
- Components can be developed and distributed independently
- Promotes adoption and competition

Supporting Many Clinical Applications



Supporting Several CDA Profiles (e.g. cross-realm)



Conclusions

- Meaningful Use of CDA requires matching of CDA data with EHR data.
- FHIR is a simple standard format for matching
- The 3-component CDA-FHIR architecture is easy to build:
 - CDA-FHIR bridge (for a few key resources)
 - FHIR front-end to application (a few key resources)
 - Search, Match, and Display (pure FHIR, configurable)
- This can all be done now
- It will promote the adoption of both CDA and FHIR
- For more detail, see the white paper from rpworden@me.com